

1 5. The machine according to Claim 4 where the radiator includes a
2 radiator over flow member through which the first fluid transfer
3 system is placed in communication with the engine.
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5 6. The machine according to Claim 5 where the drain hose is
6 adapted to be connected to the radiator over flow member by a quick
7 connect-disconnect connector and the supply hose is adapted to be
8 connected to the radiator over flow member by a quick connect-
9 disconnect connector.
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11 7. A machine for transferring coolant to and from an automotive
12 engine having a radiator in communication with the engine via a
13 detachable member and an opening closed by a radiator cap, said
14 machine including

15 a first fluid transfer system that removes a portion of used
16 coolant from the engine and replaces said removed used coolant with
17 new coolant,

18 said first fluid transfer system including a first adapter that is
19 inserted into the opening in the radiator upon removal of the radiator
20 cap to transfer the used coolant from the engine via the radiator, and
21 thereafter, to transfer new coolant to the engine via the radiator, and

22 a second fluid transfer system that simultaneously displaces at
23 least a substantial portion of used coolant in the engine with new
24 coolant,

25 said second fluid transfer system including a pair of adapters
26 that, upon manually detaching the detachable member, are attached to
27 the radiator to provide access to the radiator and the engine, one
28 adapter enabling transfer of new coolant to the engine via the radiator
29 and the other adapter enabling collection of used coolant being

1 displaced by the new coolant, and

2 a control element that enables selective operation of the first
3 fluid transfer system or the second fluid transfer system.

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5 8. The machine according to Claim 9 where the engine is not
6 operational while the first fluid transfer system is transferring fluid
7 and engine is operational while the second fluid transfer system is
8 transferring fluid.

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10 9. A machine for transferring coolant to and from an automotive
11 engine having an engine cooling system with a radiator over flow
12 member, said engine cooling system being in communication with the
13 engine via a detachable member connected to the radiator, said
14 machine including

15 a first fluid transfer system for removing a portion of used
16 coolant from the engine and replacing said removed used coolant with
17 new coolant, said first fluid transfer system being connected to the
18 radiator over flow member to enable removal and replacement of the
19 used coolant, and

20 a second fluid transfer system for displacing a portion of used
21 coolant in the engine with new coolant, said second fluid transfer
22 system, upon detaching the detachable member, being attached to the
23 radiator and the engine where the detachable member was connected,
24 and

25 a control element that enables selective operation of the first
26 fluid transfer system or the second fluid transfer system.

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28 10. The machine according to Claim 9 where the engine is not
29 operational while the first fluid transfer system is transferring fluid

1 and the engine is operational while the second fluid transfer system is
2 transferring fluid.

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4 11. A machine for transferring coolant to and from an automotive
5 engine having a radiator in communication with the engine, said
6 machine including

7 a first fluid transfer system that only operates when the engine is
8 not operational, said first fluid transfer system sequentially first
9 removes a portion of used coolant from the engine and then replaces
10 said removed used coolant with new coolant,

11 a second fluid transfer system that only operates when the engine
12 is operational, said second fluid transfer system displaces a portion of
13 used coolant in the engine with new coolant, and

14 a control element that enables selective operation of the first
15 fluid transfer system or the second fluid transfer system.

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17 12. The machine according to Claim 11 where said first and second
18 fluid transfer systems have the following common components:

19 a housing for said fluid transfer systems having a control panel
20 and a base that supports a new fluid container and a used fluid
21 container, said containers capable of being removed from the base and
22 replaced,

23 a drain hose having one end in communication with the used
24 fluid container and another end having a quick connect-disconnect
25 connector,

26 a supply hose having one end in communication with the new
27 fluid container and another end having a quick connect-disconnect
28 connector, and

29 a pump along the supply hose that is enabled when the second

1 fluid transfer system is to transfer new fluid to the engine and that is
2 disabled when the first fluid transfer system is to transfer new fluid to
3 the engine.

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5 13. A machine for transferring coolant to and from a radiator of an
6 automotive engine that may be operational or may not be operational,
7 said machine including

8 a first fluid transfer system that is operable while the engine is
9 not operational, said first fluid transfer system having

10 a first pump that is in communication with the radiator to
11 pump a portion of used coolant from the engine through the
12 radiator to create a reduced pressure in the engine, new coolant
13 being sucked into the radiator to replace said removed used
14 coolant, and

15 a second fluid transfer system that is operable while the engine is
16 operational, said second fluid transfer system having

17 a drain hose member that is manually connected to the
18 engine, and

19 a supply hose member, including a second pump, that is
20 manually connected to the radiator, said hose members being
21 connected prior to the engine being operational,

22 so that while the engine is operational, new coolant is
23 pumped by said second pump to displace a portion of used
24 coolant in the engine, said displaced used coolant flowing
25 through the drain hose.

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27 14. The machine according to Claim 13 where the first pump is
28 operated only when the first fluid transfer system is operational and
29 the second pump is operated only when the second fluid transfer

1 system is operational.

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3 15. The machine according to Claim 14 including a control element
4 that enables selective operation of the first fluid transfer system or the
5 second fluid transfer system.

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7 16. A machine for transferring coolant to and from an automotive
8 engine having an engine cooling system including a radiator, said
9 machine comprising

10 a first fluid transfer system that sequentially first removes a
11 portion of used coolant from the engine and collects used coolant as
12 said used coolant is being removed and then replaces said removed
13 used coolant with new coolant, said engine being non-operational when
14 coolant is being transferred,

15 a second fluid transfer system that simultaneously displaces a
16 portion of used coolant in the engine with new coolant and collects the
17 displaced used coolant, said engine being operational when coolant is
18 being transferred, and

19 means for selecting one of said fluid transfer systems.

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